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ABSTRACT

The literature on how educators use information to solve problems and perform their routine duties is located within a much larger, well-established literature that spans topics in organizational decision-making, communication theory, cognitive science, information theory, and evaluation utilization. This bibliography presents summaries of illustrative references for the general reader interested in information use in education. Most of the citations pertain directly to education, but some represent studies from related areas. Books, journal articles, major literature reviews, and reports of selected studies or experiments are included. The 43 citations include complete bibliographic information and a short abstract. They are numbered and arranged alphabetically, with an index at the end to provide access by topic. (Author/MAS)

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ANNOTATED BIBLIOGRAPHY
The Use of Information by Educators

Carolyn Riehl, Aaron M. Pallas

and

Gary Natriello

Report No. 13

March 1991

CENTER FOR RESEARCH ON EFFECTIVE SCHOOLING FOR DISADVANTAGED STUDENTS

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Teachers College, Columbia University

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Center for Research on Effective Schooling for Disadvantaged Students
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The Center

The mission of the Center for Research on Effective Schooling for Disadvantaged Students (CDS) is to significantly improve the education of disadvantaged students at each level of schooling through new knowledge and practices produced by thorough scientific study and evaluation. The Center conducts its research in four program areas: The Early and Elementary Education Program, The Middle Grades and High Schools Program, the Language Minority Program, and the School, Family, and Community Connections Program.

The Early and Elementary Education Program

This program is working to develop, evaluate, and disseminate instructional programs capable of bringing disadvantaged students to high levels of achievement, particularly in the fundamental areas of reading, writing, and mathematics. The goal is to expand the range of effective alternatives which schools may use under Chapter 1 and other compensatory education funding and to study issues of direct relevance to federal, state, and local policy on education of disadvantaged students.

The Middle Grades and High Schools Program

This program is conducting research syntheses, survey analyses, and field studies in middle and high schools. The three types of projects move from basic research to useful practice. Syntheses compile and analyze existing knowledge about effective education of disadvantaged students. Survey analyses identify and describe current programs, practices, and trends in middle and high schools, and allow studies of their effects. Field studies are conducted in collaboration with school staffs to develop and evaluate effective programs and practices.

The Language Minority Program

This program represents a collaborative effort. The University of California at Santa Barbara is focusing on the education of Mexican-American students in California and Texas; studies of dropout among children of recent immigrants are being conducted in San Diego and Miami by Johns Hopkins, and evaluations of learning strategies in schools serving Navajo, Cherokee, and Lumbee Indians are being conducted by the University of Northern Arizona. The goal of the program is to identify, develop, and evaluate effective programs for disadvantaged Hispanic, American Indian, Southeast Asian, and other language minority children.

The School, Family, and Community Connections Program

This program is focusing on the key connections between schools and families and between schools and communities to build better educational programs for disadvantaged children and youth. Initial work is seeking to provide a research base concerning the most effective ways for schools to interact with and assist parents of disadvantaged students and interact with the community to produce effective community involvement.

Abstract

The literature on how educators use information to solve problems and perform their routine duties is less than twenty years old. However, it is located within a much larger, well-established literature that spans topics in organizational decision-making, communication theory, cognitive science, information theory, and evaluation utilization.

This annotated bibliography is far from exhaustive. It is intended to present summaries of illustrative references for the general reader interested in information use in education. Major literature reviews are included, as are reports of selected studies or experiments. Most of the citations pertain directly to education, but some representative studies from related areas are also included.

The abstracts accompanying the bibliography entries were prepared either by expanding on an author's own abstract or by extracting key sentences and phrases from an article or report. These abstracts thus are written primarily in the authors' own words.

The citations in this bibliography are numbered and presented in alphabetical order. A brief index is provided at the end of the bibliography, so that citations pertaining to specific topics can be located quickly.

Annotated Bibliography

1. Algozzine, B., Ysseldyke, J. E., & Hill, C. (1982). Psychoeducational decision making as a function of the amount of information reviewed. Psychology in the Schools, 19, 328-334.

Psychoeducational assessment is commonplace in America's public school systems, and important decisions for and about school children are made on the basis of assessment results, including test scores. In order to combat some of the problems inherent in test-based assessments, multi-disciplinary team decision making has become current best practice. Parents, teachers, psychologists, and other professionals review assessment data as team members. However, individuals with little or no training in assessment are being asked to participate in decision making. This poses a problem for student assessment.

This study was conducted to examine the effects of amount of information available to decision makers for review. Decision makers (elementary school teachers, school psychologists, administrators, and other school staff) were allowed to review information from a variety of sources prior to making decisions about special education placement for a case study child. The researchers found that individuals who reviewed large amounts of information made decisions similar to those of individuals who reviewed little information. Approximately 49% of the participants made accurate decisions about placement when judged against an a priori criterion. These results suggest that increasing amounts of assessment information bear little relationship to the psychoeducational decision being made.

2. Bank, A. (1982). Can evaluation plus staff development equal school improvement? The Journal of Staff Development, 3(1), 170-181.

Growing cadres of research- or evaluation-oriented persons in school districts, fortified with an expanding array of evaluative techniques, constitute a new force for data-based school improvement. However, many of these resource personnel are isolated from teachers, principals, and even from other central office staff performing related functions, including staff development.

The project reported in this article grew out of a survey from the Center for the Study of Evaluation on the use of evaluation and testing for school improvement. The author classifies and describes what six school districts did to relate evaluation to staff development. In the "evaluation for staff development" category, some districts used information derived from an analysis of test scores or other data to shape some or all of the district's staff development offerings. For example, one district found that many students were failing a high school proficiency exam because high school math teachers had not incorporated checkbook balancing or comparative pricing into their algebra or geometry courses. Other districts used "evaluation as staff development," in which staff either received data from a central source or generated it themselves and used it to plan new objectives, strategies, and so on. For example, one central evaluation office assigned staff members to particular schools to work with them and help them obtain and analyze the data they needed.

The author describes several problems with this approach. Many districts do not have adequate resources for using their research and evaluation offices in these ways; some districts do not regard this approach as having a high payoff; teachers are felt to lack the training and skills to deal with data; teachers sometimes react negatively to data either as invalid because it contradicts their personal judgments or as superfluous because it corroborates their judgments or observations; and using evaluation results for local planning can easily become bureaucratized.

The author concludes that data-based instructional change requires that district managers integrate separate instruction, evaluation, and staff development functions on the central office level and also develop coordinating mechanisms between the district and principals and teachers. Efforts in this direction seem to be of recent origin, with interest due to social and political forces calling for educational change.

3. Bank, A., & Williams, R. C. (1985). From program evaluation to instructional information system. Studies in Educational Evaluation, 11, 159-182.

Instructional information systems (IIS) is the term given to computerized data banks maintained by an increasing number of schools and school districts. These information systems contain demographic information about students, records of student test scores and grades, and other information about students, teachers, and schools. The computerized systems maintain this information in an integrated file that allows records to be sorted, combined, and analyzed in a variety of user-defined ways. By enabling a variety of users to ask important evaluative questions about student learning, classroom function, school management, and district policies, instructional information systems build on current practice in testing and program evaluation but go beyond it.

The capability to analyze and report out information at many levels of specificity, on various time tables, and in report formats designed for the needs of any type of user will distinguish IIS from what might be termed computerized record keeping. These systems may have a significant impact on school organizational patterns and on the school as a workplace for adults and a learning environment for students. For example, analyses may indicate the need for changing the sequence in which subject matter is introduced, or the need for restaffing or retraining. An instructional information system may transform job descriptions and organizational roles and responsibilities for teachers, supervisors, and administrators.

As instructional information systems are developed, the first concern is typically with technical problems: selection of hardware and software, determination of what information to store, and hiring and training of staff. Once these technical problems are resolved, administrative and interpersonal problems, as well as more fundamental organizational and ethical issues, will likely need to be addressed.

The authors discuss a number of potential uses for instructional information systems, factors influencing the emergence of instructional information systems, the current status of testing, evaluation, and instructional linkages in school districts, helpful guidelines from the management information systems literature, and emerging issues surrounding information systems in education.

4. Bank, A., & Williams, R. C. (Eds.) (1987). Information systems and school improvement: Inventing the future. New York: Teachers College Press.

This book is about the use of computer-based information systems to support instructional management decisions. It is based on the work of the Instructional Information Systems Project at the Center for the Study of Evaluation at UCLA. The chapters present conceptual, technical, administrative, and organizational perspectives on instructional information systems. Some of the topics covered include: reasons for the emergence of educational information systems; the connections between information systems and educational improvement; lessons from management information systems; and how instructional information systems fit into the culture of the school or district. Several different types of instructional information systems being developed in districts and schools are described in detail, and technical aspects of instructional information systems are discussed as well.

5. Barnette, J. J., & Thompson, J. C., III. (1979). A descriptive assessment of the effect of evaluations on instruction. Studies in Educational Evaluation, 5, 77-86.

This article presents the results of a survey that examined teacher perception of: (1) the effects of evaluations on instructional improvement, and (2) the types of evaluation processes that seem to effect change. The evaluation types under consideration were program evaluation, including school accreditation studies, teacher performance evaluation, and student performance evaluation. The study sample consisted of a random sample of 208 Instructional and Professional Development chairpersons in a northeastern state; all were full-time secondary classroom teachers elected by their local association of the state education association.

Sixty-three percent of the respondents felt that program evaluation had not resulted in any change in their instructional procedures.

Similarly, 72% of the respondents indicated that teacher evaluation had not resulted in any change in instruction. However, 93% of the respondents indicated that student performance evaluation did result in a change of instruction. The type of student performance evaluation most frequently cited (49%) as resulting in instructional change was "observation of in-class work of students." "Conversations with students" and "teacher-made tests" were next most frequently cited (18% for each).

The authors conclude that if evaluation processes are to remain an important component of education, then changes in program and teacher evaluation, and in how their results are disseminated to and used by teachers, should be made.

6. Baron, J. (1988). Thinking and deciding. Cambridge, England: Cambridge University Press.

This book is about the psychology of thinking and deciding. The author's basic approach is that thinking is a search-and-inference process undertaken in order to help a person achieve his or her goals. Descriptive models of thinking -- theories about how people normally think -- are developed through methods that trace the process of thinking as it occurs, examine the conclusions that people draw or the decisions they make, or use computers to model the human thinking process. Normative models -- theories about how people should think -- are developed by philosophical reflection. Prescriptive models -- theories designed to change thinking patterns -- include heuristics and decision rules and methods of logic or scientific method.

Some topics covered in the discussion of thinking are: rationality and belief, problem-solving strategies, basic learning processes, and intelligence and creativity. In the second section of the book, on probability and belief, the author discusses accuracy of probability judgments, heuristics and biases in probability judgment, hypothesis testing, and judgment of correlation and contingency. The book's third section covers theories of utility and choice, quantitative judgment and moral thinking, social dilemmas, and decisions about the future. The book concludes with a chapter on the teaching of thinking and decision making.

7. Berkowitz, G., Hyman, I., & Lally, D. (1984, April). The development of a school wide computerized uniform discipline reporting system. Paper presented at the annual convention of the National Association of School Psychologists, Philadelphia, PA. (ERIC Document Reproduction Service No. ED 253 970)

Among the many proposed approaches to dealing with the public's concern for school discipline has been the development of models for improving discipline reporting procedures, such as parent and student discipline handbooks and detailed codes which spell out infractions and their respective consequences. However, there has been no evidence to demonstrate the effectiveness of discipline codes in reducing problems. To address these issues, the staff at the National Center for the Study of Corporal Punishment and Alternatives in the Schools began a long term organizational development project in Trenton, NJ. A preliminary survey of teachers and administrators in the district revealed the need for an accurate and easily obtainable data base in order to make discipline decisions. Teacher and Center representatives developed a codebook of offenses and discipline procedures. A coding sheet was keyed to the codebook, so that teachers could easily record infractions and disciplinary actions taken. Information from the coding sheets were entered into a microcomputer program, which could produce narrative descriptions of incidents based on the codes entered, and could support daily printouts and various analyses of the information. This system has the potential to make a considerable amount of information available to school staff very quickly.

8. Bickel, W. E. (1984). Evaluator in residence: New prospects for school district evaluation research. Educational Evaluation and Policy Analysis, 6(3), 297-306.

This article describes a collaboration between the Pittsburgh Public Schools and the Learning Research and Development Center at the University of Pittsburgh. The Center provided resident evaluators to document the design and implementation of two complex educational improvement programs in the Pittsburgh schools: an

elementary school improvement project, and a secondary school teacher center. The evaluators were able to serve six broad functions: (1) to help improve the program (through formal research activities to gather data for monitoring and reshaping program initiatives); (2) to serve as a technical resource; (3) to serve as a source of reference about work completed and outstanding issues; (4) to serve as a sounding board for ideas, conflicts, and frustrations; (5) to increase program cohesiveness by providing information; and (6) to improve a district's knowledge base. Factors that influenced the utility of the resident evaluator's role included the researcher's integration into the program, the client's orientation toward research and evaluation, the strength of the focus on program improvement, and the researcher's ability to be methodologically eclectic.

9. Bickel, W. E., & Cooley, W. W. (1985). Decision-oriented educational research in school districts: The role of dissemination processes. Studies in Educational Evaluation, 11, 183-203.

This article describes aspects of the collaboration between the Learning Research and Development Center at the University of Pittsburgh and Pittsburgh Public Schools. When the collaboration began, the school district did not have its own research office. The work undertaken through the collaboration included studies of program impact and needs assessments to establish district or program priorities. In the process, the researchers shifted from a focus on "evaluation research" to "decision-oriented educational research" (DOER) for three reasons: it diminishes the restrictions on research methods usually associated with evaluation research, it does not carry the negative baggage the term evaluation has, and it highlights the goal of being useful for decision making.

Three strategies characterize decision-oriented educational research. The first is the use of a continuous process of data collection and analysis, called monitoring and tailoring. The second is the adoption of a client orientation as a way of organizing research. The third is the documentation of program implementation, in order to enable decision makers to more systematically learn from past efforts.

The authors review some current thinking about educational research utilization and summarize factors that influence use. They then describe the process of disseminating results of two research projects. The first was a district-wide needs assessment. Dissemination activities included frequent, informal updates by the researchers for the superintendent, beginning about a month after the research was begun; a preliminary presentation of formal results to district administrators to guide revisions to the presentation format; a formal presentation to the Board of Education in an all-day retreat; and a series of meetings with various components of the district's staff. In the second program, which was a documentation of a school improvement program, dissemination involved weekly meetings with the school planning team to share insights, along with a more formal dissemination of the results of a survey.

The researchers came to believe that verbal communication of research results is at least as valuable, and in some instances more valuable, than the written word. They also stressed the importance of tailoring the content of reports -- whether verbal or written -- to the information needs of specific audiences.

10. Bluhm, H. P. (1987). Administrative uses of computers in the schools. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Schools have become more interested in computer-based information processing due to increased demands for information by federal and state agencies and accrediting bodies, growth in size and scope of school system activities, and the speed, accuracy, and storage abilities of computer systems. School business administrators were among the first to recognize how the computer could assist them in accounting for funds, processing payrolls, and maintaining personnel records. Computer technology, however, has implications for all aspects of the educational system, including facilities, equipment and supplies, instructional programming, and student records. Superintendents and building principals have come to recognize that computers are ideally suited to process information that can be used in making management decisions. This book discusses technical and organizational considerations in developing computer information systems, and then discusses applications for managing the ad-

ministrative office, managing business operations, managing the educational program (scheduling, attendance, test scoring, etc.), and managing the instructional program (computer-managed instruction). Several chapters describe considerations in selecting various types of educational software.

11. Blum, R. E., & Butler, J. A. (1985). Managing improvement by profiling. Educational Leadership, 42(6), 54-58.

In this article, the authors describe a process called "profiling" that is used to gather information about student performance in a school. The resulting school profile can then be used as the basis for planning and implementing school improvements. Profiling is part of an overall school improvement program sponsored by the Northwest Regional Educational Laboratory. School leadership teams plan for profiling, introduce the process to staff, collect and summarize schoolwide data, and prepare a written report, or profile, of the school. Copies of the profile are distributed to all staff members for consideration before making improvement goal decisions. Staff members are asked to respond to the profile in terms of their relative satisfaction with the current picture of student performance, the relative importance of improvement among areas with which staff members are dissatisfied, the acceptable standard of performance in areas of least satisfaction, and a specific target for improvement. Using this feedback, the leadership team develops improvement goals for the school. The school profile thus provides baseline data about student performance against which effects of school improvements can be measured. This information becomes a primary tool in planning and managing targeted school improvement efforts.

12. Borgida, E., & Nisbett, R. E. (1977). The differential impact of abstract vs. concrete information on decisions. Journal of Applied Social Psychology, 7(3), 258-271.

Recent findings from research on judgment and attribution processes indicate that people regard base rate data, i.e., statistical summaries of populations, as if they were uninformative. It is suggested that base rate information lacks impact because of its abstract, pallid nature. In this experimental study, college undergraduates were given written course evaluations based on the average rating scores of students who previously took the courses, and were asked to list the courses they would likely enroll in. The base rate information had little impact on course choices. In contrast, when students heard brief comments about the courses presented by other students in face-to-face encounters, this information had a substantial impact on course choices. The results suggest that information is utilized in proportion to its vividness.

13. Burstein, L. (1984). The use of existing data bases in program evaluation and school improvement. Educational Evaluation and Policy Analysis, 6(3), 307-318.

The purpose of this article is to comment on practice in the use of existing data bases in program evaluation and school improvement and to explore directions of increased and improved use. To date, the record of local district practice in maintaining and using data archives is limited; at present, local uses of data tend to be responsive and targeted rather than reflective and multifaceted. The author assumes that the current state of affairs in information maintenance and use in local districts is more a happenstance of competing priorities for economic and human resources and limited technical expertise and support than a conscious judgment that current practices exhaust the benefits that might accrue.

The author considers the debate on test score declines in 1970s as an example of how local districts' information maintenance and analysis practices made them unable to contribute to the dialogue or to document whether national trends evidenced in various policy reports applied to their local situation. Although local school districts are a long way from making full use of information from their recurring data collection activities, it is reasonable to anticipate growth in multiple uses of existing data. Some of the functions that existing data in local schools can serve, if maintained in accessible and documentable form, include long range planning; pulse monitoring; student decision making; program decision making; and informing educational policy.

These functions fall within the realm of possibility, if sufficient economic resources and interest are present. Local districts need the following: (1) a general commitment from participants in the educational community to the value of using existing data for informed inquiry and educational change; (2) sufficient computer and data literacy on the part of students, teachers, administrators, and parents to benefit from the availability of data; (3) computer hardware and software capable of providing ready and timely access to information, along with the ability to transmit information to agencies external to districts for broader policy analysis efforts; (4) sufficient computer and data management and analysis expertise to create, maintain, and analyze data archives; (5) sufficient safeguards to ensure protection of personal privacy; and (6) a healthy and informed understanding of the limits as well as the possibilities of information-based decision making.

14. Clark, C. M., & Yinger, Robert J. (1977). Research on teacher thinking. Curriculum Inquiry, 7(4), 279-304.

This article reviews research about teachers' beliefs and their judgment, decision making, and planning. It is based on the approach to the study of teaching that assumes that what teachers do is affected by what they think.

The authors first review research evidence about teacher planning. The available literature suggests that teachers do not seem to follow the "rational model" that is often prescribed in teacher training and in curriculum planning. The teachers studied did not begin or guide their planning in relation to clearly specified objectives or goals; rather, teacher planning seems to begin with the content to be taught and considerations about the setting in which the teaching will take place. The activity, rather than the objective, seems to be the unit of planning; student involvement is a secondary consideration. Then, the authors consider teacher judgment. The small number of studies of teacher judgment yield less clear cut results. The evidence is mixed on the extent to which teachers' judgments are flexible and responsive to new information. It is clear that teachers vary in the accuracy of their predictions of student achievement and the weights that they assign to factors that influence their judgment.

The studies of teacher interactive decision making (decision making during teaching) show that interactive decision making occurs primarily at times when there are interruptions of the ongoing instructional process by students. When interruptions occur (often due to changes in student level of involvement), teachers occasionally consider alternatives but hardly ever implement them.

Finally, the authors consider the idea that teachers' implicit theories about teaching may have an effect on their judgment and decision making. Some research has suggested that this connection between a teacher's implicit theory and teacher behavior is a relatively loose one, mediated by circumstances such as availability of resources, peer influence, and student characteristics.

15. Clark, C. M., & Peterson, P. L. (1986). Teachers' thought processes. In M. C. Wittrock (Ed.), Handbook of research on teaching (3rd ed.) (pp. 255-296). New York: Macmillan Publishing Company.

This chapter reviews research on teacher thinking. It briefly traces the early history of research in this area, beginning with a 1968 book that tried to describe the mental constructs and processes that underlie teacher behavior. After presenting a heuristic model of the relationship between teachers' thought processes, their actions, and observable effects on students, followed by a discussion of the primary methods of inquiry into teacher thinking, the authors review research on teacher planning, teacher interactive decision making, and teacher beliefs.

In the section on planning, the authors discuss the relationship between different types of teacher plans. For example, written lesson plans are nested within more comprehensive planning structures or "images" of teaching, and the "problem space" defined by plans made early in the school year exerts a powerful influence on later plans. Plans often result in the development or selection of routines -- instructional, management, or activity routines -- that reduce but do not eliminate the unpredictability and uncertainty of the classroom for the teacher. Next, the authors review research on interactive decisions, focusing on the frequency of interactive decisions, teach-

ers' consideration of alternative courses of action, antecedents of interactive decisions, and their relationship to teacher effectiveness. Finally, the authors discuss teachers' theories and beliefs about teaching and students, including teacher attributions, implicit theories about teaching, and teachers' perspectives of their role.

16. Clemson, B. (1980). Harnessing the computer in educational management. Journal of Educational Administration, 18(1), 98-113.

Computer applications in education have generally either (1) streamlined some existing routine operation such as payroll or scheduling or (2) attempted some very sophisticated modeling of, for example, learning processes or cost functions for an institution. None of these applications has made a noticeable impact on the practices or the management of education. The proper function of the computer, claims the author, is as a filter to suppress irrelevant data and highlight critical data, to make short term projections of trends, to visually display the dynamics of system interactions, and to allow managers and teachers to interact with models of the system (e.g., the student or the school) they are supposed to be in charge of. This paper sketches the outlines of a computerized information system designed to use the strengths of the computer to complement the strengths of the human teacher and manager.

The typical information system for a school, whether computerized or manual, includes a great deal of data on students. But this data on individuals is spread out in time and space, and it is impossible to gather together the relevant details to find out what is happening to the individual. The educational system collects and uses data on classes, on group test scores, on race and income levels, on cafeterias and buildings, on student flow through various curriculae, and so on. The teacher is the only point at which data on students as individuals is used. These observations lead the author to conclude that the educational system is managing classes, age cohorts, bus schedules, and so on, while the teacher alone attempts to manage students and their learning. The individual must be the unit around which data is organized. What is needed is a single file which receives all of the important data on individual students. This data base can provide all of the information currently produced about students. It can permit machine monitoring and exception reporting on each student; in other words, each student's progress in all subjects can be automatically monitored. The student-based system might well provide for vastly improved decisions about each student.

17. Cooley, W. W., & Bickel, W. E. (1986). Decision-oriented educational research. Boston: Kluwer-Nijoff Publishing.

This book describes in detail a joint project of the Learning Research and Development Center at the University of Pittsburgh and the Pittsburgh Public Schools. For several years, university personnel functioned as researchers for the public school superintendent and board of education, contributing to the policy making process regarding a number of major issues. Through this collaboration, the authors developed an approach to educational research that focuses on providing information that can contribute directly to educational decisions.

The first chapters of this book present the framework for decision-oriented educational research and discuss such key components as the importance of taking a client perspective, the need for an ongoing process of data collection and analysis, the nature and importance of computer-based information systems that can permit researchers to respond to client information needs in a timely fashion, the role of student achievement data in analyzing system performance, and the role of flexible dissemination processes in increasing the utilization of research results. Then, the authors present and discuss six case histories of decision-oriented research. The case histories include examples of traditional program evaluations (e.g., evaluations of a Title I program and a new reading program); needs assessments (both district-wide and at the middle school level); documentation of complex innovations; a study of the use of achievement data for analyzing administrator performance; and an analysis of the effects of grade reorganization on student achievement. The cases are used to illustrate the strategies and methods, as well as some of the problems, of decision-oriented educational research.

18. Cox, G. B. (1977). Managerial style: Implications for the utilization of program evaluation information. Evaluation Quarterly, 1(3), 499-508.

This article describes six characteristics of managerial work activity and draws implications for increasing the utilization of program evaluation data. The six characteristics are: (1) a manager's job requires much work at an unrelenting pace; (2) work activity is characterized by brevity, variety, and fragmentation; (3) managers prefer action; (4) managers prefer verbal communication; (5) the manager is active as a communication link with those above, below, and outside the organization; and (6) managerial work is characterized by a blend of rights and duties -- sometimes in control, sometimes operating under constraints.

This model of managerial behavior has at least four areas of application for evaluation in human services programs. First, evaluation data will probably never be the sole source of information about a program, or the most important from the manager's point of view. Therefore, the relevant decision is not likely to follow an evaluation report as quickly as an evaluator might wish, but on the other hand, data may persist in the system and be used at a much later time. Second, evaluation results will be utilized to the degree and in the way in which they are relevant to an issue of interest to the manager, and these are usually concrete and specific. Therefore, evaluation results should be oriented toward specific questions which are of interest to program managers. Third, managers are likely to have a rather casual attitude toward issues of validity. And fourth, although written reports are usually necessary, the real communication, insofar as the manager is concerned, will be verbal.

19. Dorr-Bremme, D. W. (1983). Assessing students: Teachers' routine practices and reasoning. Evaluation Comment, 6(4), 1-12.

This article reports on the Center for the Study of Evaluation's Test Use in Schools Project. The author first presents an overview of the project's research activities from 1979 through 1982. The project utilized a broad definition of test and testing, to encompass a wide range of types of formal assessment measures, including commercially produced norm- and criterion-referenced measures; tests of minimal competency or functional literacy; and district-, school-, and teacher-constructed tests. Less formal measures for gauging student achievement, such as teachers' observations of and interactions with learners, were included as well.

The inquiry focused on achievement assessment practices and uses in reading/English and mathematics as carried out in public schools at the upper-elementary and high school levels. Research activities included a literature review, exploratory interviews with staff from schools around the country, a nationwide survey of teachers and principals, and a study of testing costs. This article synthesizes and interprets findings from these research activities.

The findings of the Test Use Project suggest that teachers think and act both as practical researchers and decision makers and as clinicians. They orient their assessment activities to the practical tasks they have to accomplish in their everyday routines -- determining what to teach and how to teach it, determining whether what they teach is being learned and adjusting instruction as necessary, and giving students grades. Moreover, teachers take into account all of the data at hand and make sense of students' academic performances clinically. It does not seem as if teachers base their decisions primarily on one kind of assessment information, then look to others merely for confirmation. Rather, they appear to weigh various kinds of data on student achievement collectively and to make sense of what it means more-or-less holistically -- a practice typical of clinical professions.

The author argues that if testing programs are to be useful for teachers and used in classrooms, they must take into account teachers' routine thinking and practices in assessing students' achievement. The Center's research results indicate that teachers favor tests that are proximal to the everyday instructional tasks teachers need to accomplish, consonant with the curriculum that teachers are actually teaching, immediately accessible, and designed to include different types of response formats and tasks.

The article concludes with a description of test use in one illustrative school district.

20. Eckholm, D. J. (Summer, 1983). Characteristics of a comprehensive student records system. College and University, 58(4), 376-383.

This article describes the broad, general attributes that would characterize a comprehensive student records system. Such a system should be: (1) integrated (information maintained in a central file rather than in multiple files) in order to reduce data redundancy and increase reliability; (2) cumulative (one file per student, not a separate file for each term that a student was enrolled); (3) historical (with information saved for a long time, first on an active file, then an inactive file, and then perhaps stored on archived tape); (4) responsive (the system should provide timely service to requests for information, and should be able to respond to ad hoc requests for information and be able to adapt to changes in data requirements; (5) flexible (allowing data elements to be added or deleted, code changes to be made, and new technology to be incorporated; and (6) utilizing efficient and cost-effective methods of data entry and retrieval.

21. Einhorn, H. J., & Hogarth, R. M. (1978). Confidence in judgment: Persistence of the illusion of validity. Psychological Review, 85(5), 395-416.

An accumulating body of research on clinical judgment, decision making, and probability estimation has documented a substantial lack of judgmental ability for both experts and nonexperts. However, evidence shows that people have great confidence in their fallible judgment. This article examines why the illusion of validity persists and how this contradition can be resolved, and in so doing, discusses the relationship between learning and experience.

In real-world situations, judgments are made for the purpose of choosing between actions. This means that outcome information, which is available only after actions are taken, is frequently the only source of feedback with which to compare or evaluate judgment. But people often receive feedback primarily on the "good" judgments they have made, and they tend to remember this information better; they obtain less, and make less use of, information that disconfirms their judgments. Moreover, outcomes are coded in memory as frequencies rather than probabilities, which has major implications for explaining the persistence of the illusion of validity. After reviewing research on the structure of judgmental tasks, the extent to which people can observe the outcomes of judgments, and how outcomes are coded and interpreted, the authors briefly discuss approaches to improve one's ability to learn from experience and make better judgments.

22. Feldman, M. S., & March, J. G. (1981). Information in organizations as signal and symbol. Administrative Science Quarterly, 26, 171-186.

Formal theories of rational choice suggest that information about the possible consequences of alternative actions will be sought and used only if the precision, relevance, and reliability of the information are compatible with its cost. However, empirical studies of information in organizations portray a pattern that is hard to rationalize in such terms. In particular, organizations systematically gather more information than they use, yet continue to ask for more. The authors suggest that this behavior is a consequence of some ways in which organizational settings for information use differ from those anticipated in a simple decision-theory vision. In particular, the use of information is embedded in social norms that make it highly symbolic. The gathering of information provides a ritualistic assurance that appropriate attitudes about decision making exist; it is a representation of competence and a reaffirmation of social virtue. Some of the implications of such a pattern of information use are discussed.

23. Fuchs, L. S., Deno, S. L., & Mirkin, P. K. (1984). The effects of frequent curriculum-based measurement and evaluation on pedagogy, student achievement, and student awareness of learning. American Educational Research Journal, 21(2), 449-460.

When teachers integrate more frequent assessments of student achievement into their instructional programs, they may be able to structure teaching better and provide more feedback to help students recognize effective learning strategies. In special education, teachers are required by law to assess student progress as part of their individualized educational programs (IEPs). However, teachers appear to prefer unsystematic observations to objective measurement. This article ex-

amines the effects of a repeated, systematic assessment system on student learning.

Special education reading teachers used standardized tests to measure reading progress at frequent intervals (at least twice weekly) and made a modification in the instructional program when, after seven to ten measurement points, it appeared that student progress was insufficient to attain specified long-term reading goals. Children whose teachers employed the ongoing measurement and evaluation system showed greater achievement on a specific reading task and more general achievement measures than did students whose teachers used conventional monitoring methods, such as periodic teacher-made tests, informal observations, and workbook samples. In addition, the experimental teachers appeared to be more realistic about and responsive to student progress. Finally, students were more knowledgeable about their own learning as a result of the systematic measurement and evaluation treatment. This finding supports the hypothesis that student knowledge of goals may affect school performance.

(Note: For a related article, see Fuchs, L. S., Fuchs, D., Hamlett, C. L., & Hasselbring, T. S. (1987). Using computers with curriculum-based monitoring: Effects on teacher efficiency and satisfaction. Journal of Special Education Technology, 8(4), 231-236.)

24. Fuchs, L. S., & Fuchs, D. (1986). Effects of systematic formative evaluation: A meta-analysis. Exceptional Children, 53(3), 199-208.

The ATI (Aptitude Treatment Interaction) approach to learning presumes that specific learner characteristics, or aptitudes, interact predictably with certain types of instructional programs, or treatments, to produce comparatively strong student learning. However, the ATI approach to individualized special education has produced disappointing results, largely because it is difficult to specify learner characteristics adequately and not enough is known about the interactions among learner and teacher characteristics, educational treatments, and classroom environments. A more inductive approach to individualized instruction is systematic formative evaluation, in which there is ongoing evaluation and modification of student programs. Specifically, this approach employs regular monitoring of handicapped students' performance under different instructional procedures, in order to provide a data base with which individualized programs may be developed empirically. Student programs are modified when student progress is lower than desired.

This meta-analysis of 29 studies found that student achievement was higher under systematic formative evaluation conditions than under control conditions. The findings suggest that one can expect handicapped students whose individualized educational programs are monitored systematically and developed formatively over time to achieve, on average, .7 standard deviation units higher than students whose programs are not systematically monitored and developed formatively.

A less predictable finding of the meta-analysis was the significant difference associated with data-evaluation methods. When teachers were required to employ data-utilization rules, effect sizes were higher than when data were evaluated by teacher judgment. Data-evaluation rules required practitioners to analyze student performance at regular intervals and, if the data suggested certain patterns, to introduce instructional changes into a student's educational program. The method by which data were displayed also produced a significant finding. When data were graphed, effect sizes were higher than when data simply were recorded. There are at least two possible explanations for this finding. First, a graphed data display may allow teachers to analyze student performance trends more accurately and frequently; second, graphs may facilitate more frequent performance feedback directly to pupils.

Although some special education practitioners may object to systematic formative evaluation because of its time-consuming nature, the magnitude of effects suggests that systematic formative evaluation may be worth additional teacher time. Moreover, recent developments in computer software, which facilitate the collection, storage, graphing, and analysis of student performance data, indicate that technology may improve the feasibility of implementing this methodology for specifying effective individualized instructional programs.

25. Glasman, N. S. (1985). Perceptions of school principals about their engagement in evaluation on the basis of student data. Studies in Educational Evaluation, 11, 231-236.

This article describes and examines selected data on school principals' reported attitudes and behavior associated with their engagement in evaluation processes that are based on student achievement data. Subjects for the study were 271 elementary school principals in California. Five key concepts were developed to define principals' perceptions about student achievement utilization in evaluation as a managerial tool. These concepts were commitment to influencing student achievement, control over data utilization, use of data to evaluate programs and teachers, effectiveness and accountability in data utilization, and principals' own accountability in data utilization. Results showed the presence of strong beliefs and self-reported behavior associated with utilizing student achievement data in evaluation and management.

26. Herman, J. (1987). Evaluation for school improvement: try-out of a comprehensive school based model. Los Angeles: Center for the Study of Evaluation, UCLA. (ERIC Document Reproduction Service No. ED 285 894)

This article reports on the Multilevel Evaluation Systems Project, a project sponsored by the UCLA Center for the Study of Evaluation, which sought to develop and implement a "top-down, bottom-up" evaluation model in several school districts. The model starts with the assumption that evaluation can be a valuable tool for improving schools, but that the actual impact of evaluation information has been quite modest. Some possible explanations are that much evaluation practice has focused in a limited way on standardized tests; teachers and administrators are seen as data providers rather than data users; and the methods and paperwork requirements of top-down evaluation approaches have intruded into, rather than supported, teachers' own planning and improvement efforts.

Because actual control over instruction and instructional improvement resides in the school building, and also because schools and classrooms encompass tremendous diversity in student population, teacher skills, curricular goals, and teaching strategies, the appropriate unit for solving many educational problems is the school. But since individual schools may lack sufficient resources, expertise, or control to solve all of their problems, solutions often require direction, resources, and actions at higher administrative or governance levels. These realities suggest the desirability of a distributed system of evaluation which could provide local schools with a rich information base to aid their problem solving but which could also provide appropriate aggregate information for decision making at high levels of the system.

The researchers developed a prototype model for field testing in five school districts. Researchers and district staff worked together to decide what needs the evaluation system should serve, what data should be included in the core data base, and how data should be collected, analyzed, and reported. The planning process identified a set of questions which school personnel hoped the evaluation system would help them answer; these questions concerned the outcomes of schooling for students, the nature and effectiveness of the educational process, and the influence of the context in which instruction occurs (including school climate and student background). From these questions, a set of measurable indicators was developed, along with a set of desired analyses and reports.

In general, district superintendents were more interested than teachers in looking at trends over time and were more sophisticated in their desire to analyze the data in depth. Teachers, in keeping with their responsibilities, were more satisfied with simple bar charts which enabled them to analyze their classes at single points in time. Overall, the implementation of the multi-level evaluation system required sustained attention to the organizational and socio-political factors which facilitate change in schools, and school personnel needed considerable support in envisioning a system and how it might be used to help them accomplish their responsibilities.

27. Kennedy, M. M. (1984). How evidence alters understanding and decisions. Educational Evaluation and Policy Analysis, 6(3), 207-226.

This article explores the ways in which educators think about and use various kinds of "evidence" -- information from program evaluations, social experiments, management information systems, and other sources. Data for the study were gathered from interviews and observations of group meetings in 16 school districts; participants included superintendents and school board members, program managers, principals, and teachers. The researcher analyzed occurrences in the interviews and meetings when participants referred to the use of data.

The author categorized the ways in which study participants reported or demonstrated the use of data. Twenty-nine percent of the citations were for conceptual use of information (acquiring factual knowledge and drawing inferences or conclusions). Another 39% of the citations referred to information use in group interactions, for informing, persuading, or supervising others, or for responding to others. Thirty-two percent of the citations were for direct applications of information: complying with regulations, sorting and placing children, and other miscellaneous applications. These uses were often interrelated, with one use leading to another.

Some citations of information use illustrated the ways in which already-available elements of working knowledge can be combined with new evidence in order to interpret the evidence. By drawing on elements of working knowledge, participants are able to connect the evidence to a larger picture of their working situations, thus extending its meaning, its relevance, and its applicability.

The districts participating in the study engaged in a considerable volume of interactive problem solving. In order to examine the ways in which evidence was used in group interaction to create a body of shared knowledge, the author analyzed a series of episodes of information use. In several episodes, participants were able to arrive at agreed-upon interpretations, while in others they were not. Similarly, group interaction resulted in a decision being made in some cases, a delayed decision in others, and no decision in still others. The author describes some conditions that appeared to characterize each pattern of information use.

Two models of information use have been advanced in the literature: an instrumental model, in which information is used in a more or less straightforward manner in making a decision, and a conceptual model, in which "use" consists of thinking about the information. This article aimed to probe more deeply into the meaning of conceptual use of evidence. The findings suggest that the conceptual use of evidence has three important features. First, conceptual use of evidence consists of something other than the accumulation of new information. Evidence is not merely attached to the user's store of knowledge; instead, conceptual use is a formative process in which evidence is acted on by the user. Second, the formative process is not timebound; users may continue to form and reform their ideas as they confront new evidence, accumulate new experiences, or entertain new beliefs. The third important feature of conceptual use is that once users interpret evidence and draw inferences from it, it is these interpretations and inferences, rather than the evidence per se, that are incorporated into the user's store of knowledge and applied to working situations. Often these interpretations and inferences are erroneous, and often they deviate considerably from the original evidence. Thus, when participants point to evidence as the stimulus of their decisions or their insights, what they really mean is that (a) their shared knowledge happened to evolve in such a way that (b) it could incorporate the evidence, thus enabling (c) a particular decision or insight to appear to derive exclusively from the evidence.

28. Kennedy, M. M. (1982). Working knowledge and other essays. Cambridge, MA: The Huron Institute. (ERIC Document Reproduction Service No. ED 248 605)

This document is the final report of a federally-sponsored research project on how school districts use evaluation and test data for managerial, instructional, or programmatic improvement. It is based on observations and interviews with school personnel in sixteen diverse school districts. The intent behind both observations and interviews was to expose the relationship between evidence -- information from social science research, pro-

gram evaluation, test scores, and so on, and the working knowledge that school personnel had about substantive issues within their districts. Researchers documented everything that transpired during the meetings they observed, including any references to the use of evidence. Interviewers discussed issues of current interest to school personnel, with an eye toward documenting how and where different kinds of evidence fit into the interviewee's train of thought, if it did at all. The results of this study are presented in this report in a series of independent papers.

In the first paper, the author defines working knowledge as the organized body of knowledge that teachers, administrators, and policy makers use spontaneously and routinely in the context of their work; it includes beliefs, assumptions, interests, and experiences as well as social science knowledge. This paper discusses the process of seeking out new evidence and attending to it, and the process of incorporating evidence into existing working knowledge. Participants' descriptions of the process of seeking out new evidence suggest that the search process is active, continual, and unsystematic. Evidence can be incorporated into working knowledge in several ways; in each case, evidence is acted upon by working knowledge -- sorted, sifted, and interpreted, and its original source and character are often lost.

The second paper discusses how evidence is used conceptually by groups of educators, and how it is possible for group members to arrive at unified interpretations of evidence. The author found that groups of decision makers often could not use a piece of evidence in a decision until they had agreed upon its meaning, but in order to reach agreement, they often had to take considerable liberties with the interpretation of the evidence.

The third paper examines the participatory political process of educational decision making and considers whether evidence had any independent impact on decision making. The author concludes that evidence did not appear to have an independent effect. Instead, the participatory processes created a unified point of view that was so compelling that it imbued the evidence with meaning.

In the fourth paper, the author examined the use of test scores as a management tool. She identified four broad ways in which administrators might use test scores: consulting with teachers about them, using them to instigate competition among teachers, requiring that teachers respond to test score results in formal ways, and incorporating test scores into teacher evaluations. The author found that these strategies and the stress they generated were counterproductive.

The fifth paper looks at the role of in-house evaluator in these school districts, describes four types of evaluator roles, and argues that contextual constraints influence how evaluators do their jobs.

29. King, J. A., & Pechman, Ellen M. (1984). Pinning a wave to the shore: Conceptualizing evaluation use in school systems. Educational Evaluation and Policy Analysis, 6(3), 241-251.

This article is based largely on the results of a year-long case study of a large city research and evaluation unit. It discusses the evolving evaluation use literature, the process of local evaluation use, categories of evaluation use, and the implications of the case study results.

Contrary to much that is written on the non-use of evaluations, there is evidence that evaluation results are used by decisionmakers, but not in the immediate and direct ways anticipated. Furthermore, the results of research and evaluation units are not confined to end-products of evaluations, such as reports, but also include the collection and distribution of much basic status information about the school district. The authors distinguish several types of use. The first is labelled signalling, and refers to the use of evaluation information as signals from the local school district to funding and legislative support agencies that all is well, that legal obligations are being fulfilled and accountability expectations and requirements are being met. A second type of evaluation use is called charged use. Like ions in a chemical equation, evaluation information that takes on a charge, whether positive or negative, has the potential to cause a reaction in the system. It provides data upon which to base actions, and, to extend the metaphor, such use may occasionally cause sparks to fly. Charged use can be instrumental, when an observable action is directly

linked to a specific piece of evaluation information and the user has considered the information prior to making the decision. Charged use can also be persuasive, when an individual selects information and puts it to use for his or her own ends. The persuasive action taken is not necessarily suggested by the information itself; the information is instead sought or considered with a specific end in sight, then used accordingly. Non-use of evaluation results can also be considered a form of use, either instrumental or persuasive.

The authors provide examples of each type of use, and of the process leading to signalling or charged use, from the case study research. They conclude with two observations: (1) an awareness of the specific evaluation context is essential to an understanding of the use process; and (2) what needs to be increased is not merely the use of evaluation products, but their appropriate use.

30. Klausmeier, H. J. (1982). A research strategy for educational improvement. Educational Researcher, 11(2), 8-13.

This article describes a research strategy developed at the Wisconsin Research and Development Center for Individualized Schooling. The strategy has two main characteristics. First, it is directed specifically toward educational improvement; and second, it is planned and carried out cooperatively by a researcher or a research team and the participating staff of a local school.

The author suggests three explanations for the lack of evidence that educational research has had an impact at the secondary school level. First, secondary school staffs may be unable to mount schoolwide improvement efforts, since the size of a secondary school faculty prevents the whole staff from meeting together, teachers' departmentalized daily class schedules prevent smaller groups of teachers with mutual interests from meeting together during the school day, and there are few arrangements that enable teachers to share in the planning and decision making processes of the school. A second possible explanation is that educational research does not adequately take into account the uniqueness of each school, and a third possibility is that research has not been focused enough on improvement in local school settings.

The article then describes a project carried out cooperatively with five local schools and the Wisconsin R & D Center. The primary objective of the project and of the participating schools was to increase student achievement in English, mathematics, and reading by arranging an appropriate educational program for each individual student. To achieve this objective, student achievement was assessed every year and, based on the assessments, improvements were planned and carried out. Preliminary conclusions reported in this article suggest that substantial improvement in subject matter achievement typically has occurred when the school staff sets a specific improvement goal and then plans and carries out improvement activities to achieve that goal.

Finally, the author summarizes the four main characteristics of research that is focused directly on securing educational improvement in a local school. First, the research is planned jointly by an external researcher or research team and by a local school staff. The role of the researcher is that of a stimulator and consultant, not the director or the doer. Second, the school staff includes improvement-oriented research as part of their regular job responsibilities. Third, the school staff becomes increasingly autonomous in carrying out its improvement and research activities. And fourth, available knowledge is used in planning and carrying out the improvement and related research activities, and new knowledge is generated.

(Note: The project is described more fully and final results are given in Klausmeier, H. J. (1985). Developing and Institutionalizing a Self-Improvement Capability: Structures and Strategies of Secondary Schools. New York: University Press of America.)

31. LeMahieu, P. G. (1984). The effects on achievement and instructional content of a program of student monitoring through frequent testing. Educational Evaluation and Policy Analysis, 6(2), 175-187.

Standardized tests have been identified as powerful influences on teachers' selection of content to cover in instruction. A number of programmatic efforts have attempted to consciously link testing

with instruction; the results of frequent assessment with tests are used to inform instruction, with teachers tailoring their classroom practice to respond to the data which are generated. This study looked at whether a local assessment program, which involved setting twenty math objectives for each elementary grade level, testing students on each objective every six weeks, and giving feedback to teachers so they could adjust instruction, resulted in higher achievement on standardized achievement tests (and not just on the locally-developed tests).

Data from the California Achievement Test (CAT) were analyzed at the item level to determine those items that were substantively the same as the material assessed by the locally-developed instruments. Results showed that student progress on CAT items that overlapped with the objectives measured by the district tests was much greater than progress on items that did not overlap. The author concludes that the frequent assessment program is a powerful tool in enhancing the achievement of students. However, teachers may adopt the objectives of the monitoring program as the sole content of instruction, resulting in a routinization of instruction and a loss of learning outside the content measured by the monitoring program.

32. Low, D. Ability grouping: Decision-making at the secondary level. (1988, April). Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA. (ERIC Document Reproduction Service No. ED 297 023)

This paper examines the processes used to form ability groups at the secondary level. The practice of ability grouping has been debated since its introduction in American public education in the late 1860s. To date, the major portion of research on ability grouping has focused on its effects in four areas: academic outcomes, affective outcomes, socioeconomic and ethnic segregation, and classroom proceedings. Less research has been done on the formation of ability groups, and most of it has been at the elementary level. This study examines the procedures used by one school district to place junior high school students in ability grouped classes for English and science. The study focuses on the decision-making process and the placement criteria used by school personnel to make their recommendations.

In-depth interviews were conducted with nineteen junior high school staff members (teachers, counselors, and principals) from five schools. Participants were asked to make placement recommendations for four hypothetical students. The results showed that staff members differed in the way they made placement decisions as well as in the result. Placement recommendations for the four hypothetical students differed; no student received the same placement recommendation from all respondents. In general, participants shared a similar perspective regarding the differentiation in content, goals, and activities between the classes to which the hypothetical students could be assigned. High level classes emphasized higher order thinking skills and college preparatory knowledge, while low level classes emphasized lower order thinking skills and basic content. The participants differed in the way they considered three student characteristics -- student interest, reading level, and home life -- when making placement decisions. They also differed in their beliefs about the goals of the recommendation process. Some participants believed that the recommendations should result in a placement where the student would experience the highest chance for success. Others believed that recommendations should result in placements where students would experience an academic challenge.

These results have implications for policy makers. Because school professionals differ in the way they make placement recommendations, the resulting placements could be functions of the teachers or counselors involved, not the students. Policy makers should consider articulating a specific, preferred placement strategy that would provide direction in the interpretation and weighting of various factors.

33. Morine-Dershimer, G. (1978-79). How teachers "see" their pupils. Educational Research Quarterly, 3(4), 43-52.

In studying the information processing of teachers, it is important to examine the concepts that teachers use to organize their observations of their pupils, for these are the concepts which form the basis of teachers' thinking, problem solving, and

decision making about pupils. In this study, elementary school teachers were interviewed five times during the school year -- at the end of the first day of school in September, shortly after teachers received pupils' diagnostic reading test scores in November, after reading lessons in January and March, and in late May, shortly before the end of school. Teachers were asked to sort pupils into as many groups as they found meaningful, and then to describe the pupil characteristics they used for grouping; the process was repeated until teachers could generate no new groupings.

Results indicated that teachers frequently sorted by six categories of characteristics: ability/achievement, involvement in instruction, personality, peer relationships, activity orientation (which activity the student had been working on that day), and growth/progress. The content of teacher conceptions of pupils shifted over time in ways consistent with changing teacher tasks. In September, when teachers were getting to know students, the focus was on pupil personality; in November, when classes were well into the instructional program, teachers focused on pupil involvement in instruction. In June, looking back over the year and evaluating the results of their efforts, teachers focused on pupil growth/progress and on peer relationships, that is, on both the cognitive and social development of the pupils. At no time was pupil ability/achievement a dominant characteristic for teachers in their organization of information about pupils.

Moreover, teachers tended to focus on different pupil characteristics in different observational settings. Pupil personality and peer relationships were important factors in their general observations of pupils (in September, November, and May), while pupil ability and the activities in which they were engaged were important factors in teachers' observations of pupils in specific lessons. Different teachers also focused on different characteristics, depending on their curriculum-management systems (e.g., whether instruction was individualized).

The findings suggest that teachers' organizational concepts are not rigid and unchanging. The teachers in this study exhibited an ability to use a range of concepts to organize their observations of pupils. Furthermore, the concepts used appeared to be responsive to the context in which observations occurred, especially taking into account the time of year, observational setting, and curriculum-management system.

34. Murphy, J., & Hallinger, P. (1986). Transcript analysis: A tool for improving quality and equity in high school programs. The High School Journal, 68(2), 132-138.

The authors of this article argue that one of the most powerful tools available for improving high schools is transcript analysis, the systematic review of student transcripts to answer questions about the quality and equality of students' educational experiences. Although a few researchers have reported using this technique, transcript analysis is not being systematically employed in high schools today, either as an ongoing assessment measure or as an integral part of high school improvement programs. In this article, the authors review the technique of transcript analysis.

Transcript analysis allows educators to monitor student progress by obtaining general assessment information, for example about student success in courses, as well as assessment information of critical importance at the secondary level, such as the selection of logical sequences of courses by students. Transcript analysis allows for the direct measurement of student opportunity to learn material and alignment of curriculum. It also assesses the equity of educational programs at the high school.

A number of characteristics of transcripts make them useful in school improvement efforts. Transcripts are rich in information about courses and students; they provide a longitudinal perspective that is both needed and often lacking in school improvement efforts; and they lend themselves to use in conjunction with other types of information, such as standardized test scores. Transcripts also lend themselves to disaggregation; that is, they facilitate the separation of important information into various groups; e.g., males vs. females taking mathematics courses, college preparatory vs. non-college prep students taking four-year sequences in English or science.

The authors discuss how transcript analysis can be used to examine three aspects of coursework -- total courses taken, academic vs. non-academic courses, and focus and sequence of courses. For

example, in looking at the total number of courses taken by students, it is possible to examine the average number taken compared to units required for graduation, or the pattern of courses taken as students progress through grade levels. Transcript analysis can confirm or disconfirm whether a pattern of over-concentration in non-academic subjects is occurring in a given school. One of the most informative aspects of transcript analysis is the review of the logic inherent in the patterns of courses taken by students; sequences and patterns of courses can be examined to determine the extent of non-logical, non-sequential course taking. Finally, transcript analysis can be used to examine educational equity -- whether different groups of students differ in the average number of courses taken, the concentration of academic courses, or the pattern and sequence of courses taken.

The authors conclude with three points. First, because transcripts present information about students at a given school, the results of transcript analysis are site specific; solutions are not imposed from above to solve problems that don't exist in the school. Second, transcript analysis is much easier if a computerized data base is used. Third, the power of the findings appears to be greater when the staff is involved in the process of analysis.

(Note: Specific findings from a transcript analysis of five Illinois high schools are reported in Murphy, J., Hull, T. R., & Walker, A. (1987). Academic drift and curriculum debris: Analysis of high school course-taking patterns and its implications for local policy makers. Journal of Curriculum Studies, 19(4), 341-360.)

35. O'Reilly, C. A. III. (1982). Variations in decision makers' use of information sources: The impact of quality and accessibility of information. Academy of Management Journal, 25(4), 756-771.

The direct relationship between the quality of information used by a decision maker and decision making performance has been well established. However, the majority of studies of information and decision making have been done under controlled laboratory conditions that may not reflect adequately the circumstances under which decision makers operate in actual organizations. In actual organizations, information may be contradictory or vague, available from sources of varying credibility, and available at social as well as economic costs. Actual decision makers may be distracted, under time pressures, and pursuing multiple objectives. Moreover, a number of investigations have documented differences among individuals in preferences for types of information, but little evidence is available that examines variations among decision makers in how and where information is obtained.

The study reported in this article examines variations in the reported frequency with which decision makers use various sources of information. The rationale developed here to explain variations in use of information sources is predicated on perceptions of quality and accessibility of information and variations in individual and perceived task characteristics. The argument is made that, due to the ambiguity inherent in much information available to decision makers and to the pressures on decision makers to produce results, accessibility of information may dominate quality as a determinant of preference for information sources.

The study involved a survey of 163 county welfare workers whose duties included the screening and processing of applicants. The participants were asked to respond to questions about the tasks they had to complete and the sources of information they consulted while performing the different tasks. Results showed that when respondents perceived information to be of high quality, they also reported more frequent use. However, accessibility of information was a stronger predictor of use than was quality. There are several possible explanations for the dominance of accessibility over quality. First, decision makers incur social and economic costs in seeking out quality information that is not readily available. Under time pressures, for instance, a more accessible source may be preferred to an inaccessible one, even if the quality of information provided is lower. Other possible explanations are that the structure of the organization may restrict access to quality sources, or that organizational incentive systems may have intended or unintended effects on information search.

36. Schwenk, C. R. (1986). Information, cognitive biases, and commitment to a course of action. Academy of Management Review, 11(2), 298-310.

This paper examines the ways in which organizational executives may promote commitment through the use of information. The author draws on literature in behavioral decision theory to explain the ways information may influence the decision processes of those who are asked to contribute to a course of action. Researchers in this area have identified a number of biases (which result from human beings' limitations in their ability to process information) and heuristics (simplifying strategies or "rules of thumb") which people commonly use to reduce the amount of information they must consider in decision making.

The basic assumption underlying the model presented in this article is that information may be manipulated by executives to encourage particular types of simplifying heuristics or biases by persons in order to increase their confidence in a course of action and their commitment to it. For example, research has shown that people's judgments tend to be biased by vivid anecdotal information, even if it contradicts more accurate statistical information. Therefore, executives may be able to influence persons' commitment by providing highly vivid information. The amount of information available for decision making has been shown to increase individuals' confidence in their decisions; thus, executives might also promote commitment by providing large volumes of information. Finally, since decision makers tend to seek out information which confirms their perceptions of control, executives can promote a perception that they are in control (i.e., that there is strong leadership) by providing certain types of information.

The author discusses how commitment to a course of action can escalate, even in the face of negative feedback or failure. Also discussed are conditions under which persons may become "entrapped" by a particular course of action. The article concludes with a brief discussion of ethical issues in information management and suggestions for future research.

37. Shavelson, R. J., & Stern, P. (1981). Research on teachers' pedagogical thoughts, judgments, decisions, and behavior. Review of Educational Research, 51(4), 455-498.

This article reviews research on teachers' pedagogical thoughts, judgments, and decisions, drawing primarily on studies from 1976 to 1981. The article has six substantive sections: (1) a description of the assumptions and methods of research on teachers' thoughts and decisions; (2) a discussion of the conceptual underpinnings of this research area and a review of research on the types of information teachers use to make judgments and decisions, the relation between characteristics of teachers and decisions, and teachers' evaluations of their teaching; (3) a review of the research on the cognitive processes underlying teachers' judgments and decisions; (4) a review of research on teachers' instructional planning; (5) a review of research on interactive judgments and decisions; and (6) a discussion of recommendations for further research.

Among the many ideas and findings summarized in this article are the following: Research on teachers' thought processes assumes that teachers intend to be rational in how they make judgments and decisions, but that they must operate under the constraints that many teaching situations preclude reflective behavior and that human beings have limited ability to process information. Thus, teachers often seek ways to reduce their information processing load -- by relying on routines of practice or by using heuristics, attributions, and other psychological mechanisms for simplifying decision making. Some of the antecedent conditions that affect teachers' decisions are information about students (their ability, social competence, classroom behavior habits, etc.), the nature of the instructional task, and the classroom and school environment. Characteristics of teachers themselves which affect decision making include their conceptions of subject matter and how it should be taught, and their own cognitive style, including the ways they select and use information. The research on teacher planning has shown that teachers are concerned with subject matter and content, primarily in order to build tasks. Teachers also consider information about

students, especially about their ability, when planning instruction. Specific goals and objectives do not appear to play a major role in the planning process, although they may be an implicit part of teachers' mental image of the planning process. Since teachers' main concern during interactive teaching is to maintain the flow of activity, decision making during teaching usually arises when the teaching routine or activity is not going as planned, as evidenced by lack of student involvement or behavior problems. Typically, teachers choose not to change the routine in any major way, but incorporate this information into future plans.

(Note: For a related article, see Shavelson, R. J. (1983). Review of research on teachers' pedagogical judgments, plans, and decisions. The Elementary School Journal, 83(4), 392-413.)

38. Sirotnik, K. A. (1984). An outcome-free conception of schooling: Implications for school-based inquiry and information systems. Educational Evaluation and Policy Analysis, 6(3), 227-239.

This article discusses the use of a comprehensive information system for schools and districts that provides in-depth quantitative and qualitative description of schooling and facilitates dialogue, judgment, decision making, and action by those concerned with and/or responsible for schooling. The author refers to this general process as "contextual appraisal" or "systemic evaluation." The process is essentially formative and longitudinal, using feedback-revision loops for adapting to the changing circumstances of schooling. Monitoring student achievement progress is a fundamentally important part of the system, but "outcomes" are really pieces of the larger system and can easily be "inputs" when the system is viewed interactively and longitudinally.

The author distinguishes between outcome-bound and outcome-free conceptualizations of schooling. Outcome-bound models include input-output models, school effectiveness models, classroom learning models, and systems theory models. These approaches tend to rely heavily on measures of student learning outcomes, usually achievement tests. Such models focus on the impact of student characteristics and school conditions in producing student outputs. The process of change in an outcome-bound model is fairly straightforward: conduct a needs assessment, identify the weak links in the system, infuse the system with improvements, and finally evaluate your efforts by looking for changes in outcome performance. In contrast, an outcome-free approach looks at the school as a cultural ecology, where people are in a continual process of trying to make sense of, engage in, and/or adapt to structures and behaviors, in a mileau of feelings, attitudes, beliefs, and values. This conception suggests quite a different orientation regarding school improvement. It suggests an inquiry approach, where people actively and continuously engage in systematic deliberation about school improvement, trying to understand what goes on in their schools.

District support, in spirit as well as substance, is crucial to school improvement, but the school is the primary focal point for bringing about improvement and change. The implications for information systems follow directly from this position. Top-down perceptions of the kinds of data relevant for schools are likely to miss the targets of need for school-based improvement. On the other hand, bottom-up perceptions of the kinds of data relevant for schools are likely to provide much information that is useful at the district level as well. Information systems should be operationalized with a multi-method approach to data collection, and should focus on analysis at multiple levels (individual, class, school, and district).

39. Spady, W. G. (1988). Organizing for results: The basis of authentic restructuring and reform. Educational Leadership, 46(2), 4-8.

In this article, the author argues that our educational systems, schools, and instructional programs are not organized to ensure that all students learn well; instead, they are organized primarily for student custody and administrative convenience. The prevalent practice paradigm in schools is both defined by and organized around the school calendar, and its adjuncts, the clock and the schedule. School decision making, curriculum planning, instructional and administrative operations, institutional arrangements, student certification and graduation systems, and student opportunity and eligibility conditions are all defined by and tied directly to the calendar. Carnegie units, credit hours, class periods, grade

levels, and student eligibility criteria all reflect our time-based way of doing business. Even courses, which are commonly referred to as "bodies of knowledge," are actually time blocks that uniformly last nine months, no matter what the content to be mastered or the success of students in mastering it.

In contrast to this approach, Outcome-Based Education (OBE) means organizing for results, basing what we do instructionally on the outcomes we want to achieve. Outcome-based practitioners start by determining the knowledge and competencies they want students to achieve, and then design curricula and instructional systems with the intent that all students will ultimately be able to achieve them successfully. For example, in the outcome-based paradigm, it is the outcomes, not the calendar, that determines credit and defines what constitutes a "course."

The author briefly describes an outcome-based education program implemented in Arizona and Illinois. The article concludes with a description of three key principles of OBE: clarity of focus on outcomes, expanded opportunity and instructional support, and high expectations for learning success.

40. Sproull, L. S. (1981). Managing education programs: A micro-behavioral analysis. Human Organization, 40(2), 113-122.

Education managers operate in a complex information environment. Some theories of information processing and managing in organizations assume connectedness: information is connected to decisions; decisions are connected to action; action generates more information; and so on. Recent research suggests that the connections between individuals and their information environment may not be as stable or predictable as that. The concept of managerial attention is important in explaining connections between a manager and information. This article reports results from an observational study of five managers of major educational innovations who were nominated as being successful in their jobs. The study focuses on the structure and content of managerial attention.

The author reports five structural characteristics of managerial attention. First, attention is local: 75% of the manager's day is spent at the program offices. Second, attention is choppy: the manager's workday is composed of many episodes of very brief duration. A third characteristic is the oral nature of managers' work: over three-fourths of the manager's workday is spent talking to people. The manager averages 44 separate meetings and conversations during the day. Fourth, manager's work is unpredictable; only about a third of the day is spent in scheduled activities. And fifth, managerial attention is as much other-directed as self-directed: about half of the verbal contacts are initiated by the manager. In terms of the content of managerial attention, the research showed that the manager devotes relatively little attention to issues directly related to teaching and learning, only about 12% of the day. The rest of the manager's day is spent attending to logistics (22% of managerial time), external requirements (20%), and social pleasantries (11%).

The article concludes with some observations about how these characteristics of managerial attention affect the relationship between the program and the larger bureaucracy, and the nature of instructional monitoring and feedback. For example, managers spend little time reading directives from above, so that top-down models of educational change are rarely implemented exactly as directed. And the short, choppy rhythm of the manager's attention leads more to an informal, anecdotal assessment of teacher performance than to a systematic, in-depth analysis of the instructional program.

41. Sproull, L. S., & Zubrow, D. (1981). Performance information in school systems: Perspectives from organization theory. Educational Administration Quarterly, 17(3), 61-79.

This article explores the nature of administrative performance information in school systems. Administrative performance information is information collected by and for administrators about the performance of various components of their organization -- students, teachers, and administrators. The article is based on a study of 116 school system central office administrators, in which the participants were surveyed or interviewed about their beliefs and practices concerning performance information. Results showed that every school system in the study administered standardized tests, but that test scores were

not very salient to administrators in their day to day decision making. Central office administrators attributed primary use of test data to others in the system; they believed that building level actors -- teachers, counselors, and principals -- find test scores more useful. Central office administrators preferred to use other forms of performance information, such as personal observation, reports from teachers, parental and community feedback, and the achievements of students and graduates. They appeared to acquire much of their information in an ad hoc and haphazard way.

The authors present a general specification of an administrative performance information system that can give both theorists and practitioners a broad and realistic framework for assessing performance. Such a system would be characterized by information collected from many sources, through many collection modes and several different timeframes, and covering a wide bandwidth of data. The system would be accessible for use by any member of the organization. Information from an administrative performance information system would have a variety of uses, including providing a snapshot of organization status (scorecard use), highlighting a problem (attention-directing use), solving a problem, and demonstrating the organization's rationality and accountability (symbolic use).

The article concludes with the observation that for school administrators, personal observation and conversation may be better sources of information for their day to day tasks than test scores are, but administrators may not be aware of how their information collection strategies lead them to biased representations of organizational performance. Observation and conversation could be systematically and explicitly incorporated into an administrative performance information system, for example by calling teachers or parents at random to ask about how things are going, or by recording many details of an observation instead of only an overall impression.

42. Stiggins, R. J., Conklin, N. F., & Bridgeford, N. J. (1986). Classroom assessment: A key to effective education. Educational Measurement: Issues and Practice, 5(2), 5-17.

Most scholars of educational measurement focus on the role of standardized tests in the assessment of student achievement. It is the perspective of these authors that that focus is too narrow; standardized tests represent only a small fraction of the assessments that take place in schools, while little is known about the nature, role, or quality of the more common assessment measures developed and used by teachers in the classroom. This article reviews what is known about classroom-based assessment. First, the authors review research on testing, which shows that classroom assessments are often designed and constructed by teachers with little formal training in assessment. Teachers tend to use different assessment techniques for different purposes (e.g., diagnosis, grouping, or grading); elementary teachers use assessment practices that differ from those used by secondary teachers; and teachers tend to assess students quickly. Analyses of teacher-developed tests show a strong tendency to use short-answer questions that test knowledge of facts, rules, or principles. Teachers rely on their own assessments of students as the primary source of information on student achievement. Little research has been conducted on the quality of teacher-developed assessments, but there are some indications of problems with quality.

Next, the authors review evidence from research on teaching, which places the assessment process within the larger context of teacher decision making. When faced with planning decisions, teachers place greatest reliance on information about students' ability and academic performance. However, the focus of planning activity is not on student characteristics, nor on goals and objectives, but on instructional activity and content. Information on students' social behavior is used more during interactive decisions (while instruction is occurring); however, teachers' use of social cues to categorize students' intellectual competence sometimes results in misdiagnoses of student ability and achievement. Teachers use a variety of strategies to reduce their information overload and deal with the complexity of the assessment process, including sampling information from selected students, or assessing students on characteristics that are easily measured, such as recall of facts.

The article concludes with a discussion of implications of these findings for classrooms and schools, for further research, and for training.

43. Williams, R. C., & Bank, A. (1984). Assessing instructional information systems in two districts: The search for impact. Educational Evaluation and Policy Analysis, 6(3), 267-282.

Despite differing approaches to decision making, scholars generally agree that information can and should play a vital role in effective decision making. Organizational decisionmakers can be thought of as having three kinds of information sources: working knowledge (information gathered from informal or experiential sources), designated information requests (such as asking a trusted source or commissioning a specific study), and designed information systems (a formal, continuing process of collecting information, such as with a management information system). Public school officials have been criticized for relying too heavily on working knowledge. One answer to this criticism has been the development of educational evaluation. Thus, beginning with federally funded projects in the 1960s, formal evaluations were intended to provide reliable, comprehensive, and unbiased information about the efficacy of particular programs. An emerging movement in education is toward developing district-wide instructional information systems that can provide a variety of users with information that will help them make instructionally relevant decisions. These systems can potentially gather and link together data on factors such as pupil characteristics (ethnicity, language skills, measured academic aptitude), pupil performance on tests, instructional methods, and attitudes and opinions, to inform decision makers.

This article examines the use of such information systems in two school districts. The researchers examined, through interviews with school staff, the expressed satisfactions of individuals and groups with the information they received from the instructional information systems, the processes they engaged in, and their self-described behavior in relation to the information and how it was used. The researchers also examined unanticipated or unintended effects of the information systems.

In the first school district, the instructional information system contained information from needs assessments of parents, educators, and students, along with standardized test score data. The system was designed to provide local school site councils with information for use in three stages of decisionmaking: identifying and clarifying problems, generating and selecting solutions, and monitoring solution effectiveness. The researchers found that the information system played only a minor role in decisionmaking by the school councils, although information from the system did sometimes corroborate perceptions that were initiated through other means. This may have been due in part to the fact that the information maintained through the information system was limited in its scope and accuracy.

In the second district, the instructional information system was designed to help teachers continually tailor their instructional practices to the learning outcomes of their students. The system consisted of a series of criterion-referenced tests, measuring student progress on objectives in a K-8 curriculum for reading, language arts, and math. The tests are given to students at least three times a year, and scores are reported quickly for individual students and also by class and by school. Test score results are used to plan a staff development program, available to all teachers, which provides training in the diagnostic prescriptive teaching skills which are felt to be necessary to act upon the test score results. Each school also has a learning specialist, who functions as a resource to teachers and also provides extra instructional time for students who need it. The researchers found that the information system in this district was used often to influence teaching practices and the planning and monitoring of instruction. Teachers were articulate about the positive uses of the test score-based system, although they expressed some reservations about relying exclusively on test information on students. The system appeared to have several ripple effects; it facilitated communication among teachers, principals, and parents, and it was associated with a sense of collegiality and shared values in the schools.

The researchers hypothesized that the different levels of use of the two instructional information systems depended in part on the significance of the decisions which the systems were meant to inform, the compatibility of the system with the culture of the schools, and users' perceptions of the validity of the data.

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